



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,758	05/31/2001	Kenichi Nishikawa	040894-5665	6103
9629	7590	05/05/2004	EXAMINER	
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			LEURIG, SHARLENE L	
			ART UNIT	PAPER NUMBER
			2879	

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/867,758	NISHIKAWA, KENICHI	
	<b>Examiner</b>	<b>Art Unit</b>	
	Sharlene Leurig	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The amendment filed on February 23, 2004 has been entered and acknowledged by the examiner. Claims 1, 2 and 7 have been amended.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1, 2 and 4-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Sugimoto et al. (6,274,971) (of record).

Regarding claim 1, Sugimoto discloses a spark plug with a center electrode, a metal shell, and an "alumina-based" insulator disposed between the center electrode and the metal shell and coated with a glaze layer (column 2, lines 8 and 32). The glaze layer features up to 1 mol% of Pb in terms of PbO (column 4, line 65), a Si component in terms of SiO<sub>2</sub> in an amount of 35 to 55 mol%, a B component in terms of B<sub>2</sub>O<sub>3</sub> in an amount of 15 to 35 mol%, a Zn component in terms of ZnO in an amount of 5 to 20 mol%, a Ba component in terms of BaO in an amount of 0.5 to 20 mol%, and two alkali metal components of the group Na<sub>2</sub>O, K<sub>2</sub>O, or Li<sub>2</sub>O between 11-15 mol% in total, where

Art Unit: 2879

the Li component of the glaze layer satisfies the relationship  $0.2 < \text{NLi}_2\text{O} / \text{NR}_2\text{O} < 0.5$ , where R is Na or K (Table 5).

Regarding claim 2, Sugimoto discloses a ratio of the alkaline metal components satisfying the claimed relationship  $0.4 < \text{NK}_2\text{O} / \text{NR}_2\text{O} < 0.8$ , where R is Li or Na (Table 5).

Regarding claim 4, the disclosed amounts of B, Zn, Ba, Na, K and Li can be combined to satisfy the claimed ratio of  $1.5 \leq \text{N}(\text{B}_2\text{O}_3 + \text{ZnO}) / \text{N}(\text{REO} + \text{R}_2\text{O}) \leq 3.0$  (Table 5).

Regarding claim 5, Sugimoto discloses a total amount of ZnO, BaO and SrO of between 8-30 mol% (Table 5).

Regarding claim 6, Sugimoto discloses a glaze layer that contains at least one of Zr, Ti, Mg, Bi, Sn, and P up to a total of 5 mol%, which fits within the claimed range of 0.5 to 5 mol%, in terms of  $\text{ZrO}_2$ ,  $\text{TiO}_2$ ,  $\text{MgO}$ ,  $\text{Bi}_2\text{O}_3$ ,  $\text{SnO}_2$ , and  $\text{P}_2\text{O}_5$  (column 4, line 26).

Regarding claim 7, Sugimoto discloses a spark plug with a glaze layer having a terminal metal fixture and a center electrode as one body in a through-hole of the insulator, or separated from the center electrode via a conductive bonding layer (column 9, line 26). The insulation resistance of the spark plug glaze layer is 200 MΩ or more, which is measured by keeping the whole of the spark plug at 500 °C and passing a current between the terminal metal fixture and the metal shell via the insulator (column 9, lines 24-38).

Regarding claim 8, Sugimoto discloses an insulator containing Al "in an amount of 85 to 98% by weight as reduced to  $\text{Al}_2\text{O}_3$ " (column 9, line 57), which fits within the claimed range of 85 to 98 mol%. The glaze layer has an average thermal expansion

Art Unit: 2879

coefficient of  $5.0 \times 10^{-6}/^{\circ}\text{C}$  to  $8.0 \times 10^{-6}/^{\circ}\text{C}$  as measured within the temperature range from 20 °C to 350 °C, which falls within the claimed range of  $5.0 \times 10^{-6}/^{\circ}\text{C}$  to  $8.5 \times 10^{-6}/^{\circ}\text{C}$  (column 9, line 59).

Regarding claim 9, the glaze layer of the spark plug has a softening point within the range of 600 °C to 700 °C (column 12, line 14).

### ***Response to Arguments***

4. Applicant's arguments, see Remarks, filed February 23, 2004, with respect to the rejection(s) of claim(s) 1, 2 and 4-9 under 35 U.S.C. 103(a) as being unpatentable over Hikata (JP 11-106234) (of record) in view of Sugimoto et al. (JP 2000-048931) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sugimoto et al. (6,274,971) (of record).

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

Art Unit: 2879

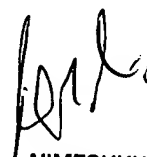
mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharlene Leurig whose telephone number is (571) 272-2455. The examiner can normally be reached on Monday through Friday, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sll



**NIMESHKUMAR D. PATEL**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**